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Laser scanning sensor

User Manual

DE-42xx/DE-46xx

V1.02

Manufacturer: Dongxingsong Technology Co., Ltd.

10/2022

Thank you for choosing our company's products. Please read this manual carefully before use.

Version Announcement

Document Version	Add/Remove Information	Modified time
V1.0	release	2021.11.16
V1.01	Change model definition	2021-12-01
V1.02	Add configuration software usage	2022-10-28

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1Safety Precautions

1.1Wiring environment considerations

Do not reverse the power supply or connect it to a voltage higher than the specified maximum operating voltage, otherwise it will damage the sensor.

If the power supply is connected to a voltage lower than the specified minimum operating voltage, the sensor will fail to work or malfunction.

Please follow the wiring instructions in the manual; otherwise, the sensor may not be able to detect the input signal correctly.

Do not connect the output signal terminal to devices that exceed the sensor's load capacity, otherwise it will cause sensor failure.

1.2Debugging environment notes

Only qualified authorized personnel are permitted to connect, install, debug, and configure the laser sensor.

Confirm that the peripheral devices associated with the sensor are in a reliable shutdown state.

Confirm that the debugging personnel are in a safe position.

Confirm that other people or objects are outside the equipment's operating range.

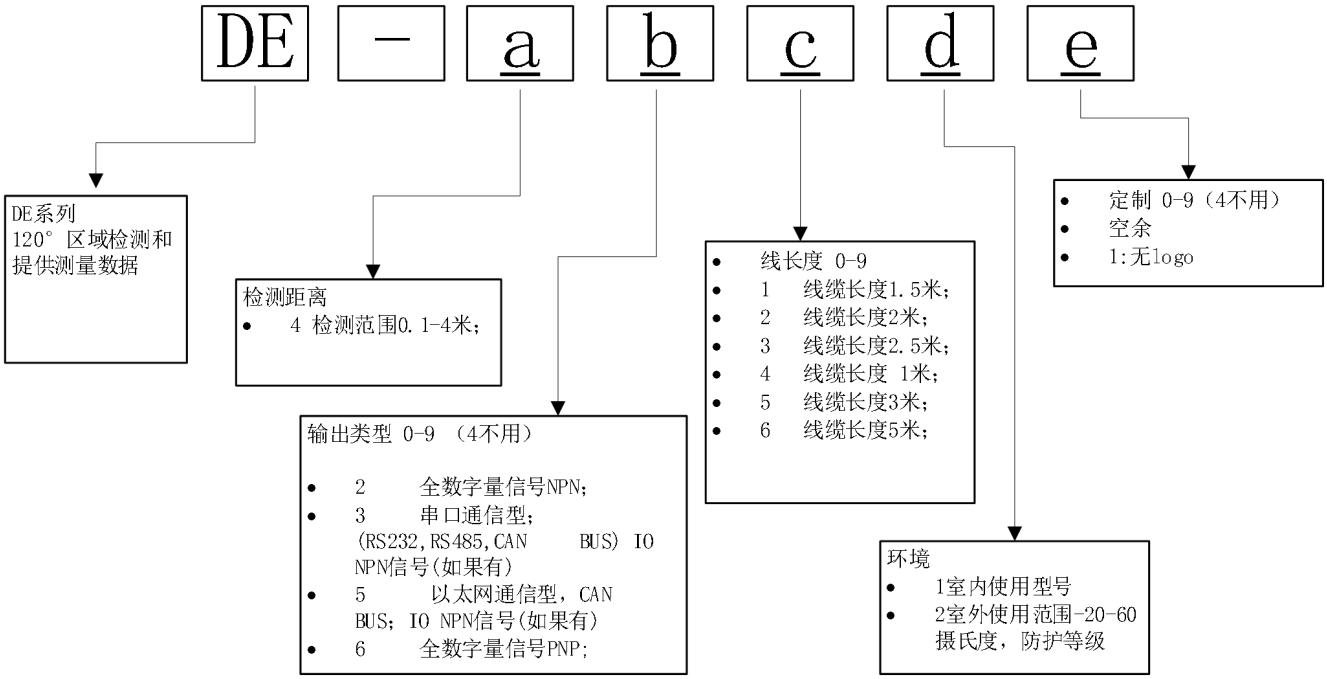
2Function Introduction

2.1Product Models and Specifications List

parameter / Product Model	DE-42xxx	DE-46xxx	DE-43xxx	DE-45xxx
Operating voltage	DC15-30V			
Power consumption	1W		1.2W	
Light source type	Laser (pulsed light)			
Light source level	1(IEC 60825-1:2014,EN 60825-1:2014)			
wavelength	905nm			
Pulse width	5ns			
Measurement methods	Pulse ranging technology (PRT)			
Light resistance	Resistant to sunlight (≤80000 Lux)			
Detection range	0.1-1.5rice(10%(reflectivity)			
	0.1-4rice(90%(reflectivity)			
Angular resolution	0.5°			0.1°、0.2°Software configurable
Recognizable object shapes	Arbitrary shape, resolution calculated based on sensing distance			
Output raw measurement data?	Not supported		support	
digital input	4input (NPNenter)	4input (PNPenter)	none	
Switch output	4One output (NPN(output)	4One output (PNP(output)	4One output (NPN(output)	
Number of channels	0-15total16One channel		0-63total64One channel	
Configure port	USB Type-C			Ethernet
RS232	none		RS232-HS	none
RS485	none		RS485-HS/RS485-Modbus	none
CAN	none		CAN-HS/CANOPEN	none
Ethernet	none			TCP/UDP
Scan rate	The motor scanning speed is10Hz,go through4After frequency multiplication, it becomes40Hz			
Scanning angle	120°			
Laser scanning frequency	72kHz,144kHzConfigurable software			
Measurement accuracy	±4cm			
Detect output delay	0-500msConfigurable			
Detection hold delay	0-500msConfigurable			
Usage Environment	Indoor use, operating temperature (-10°C-50°C), working humidity (≤85%RH(No water vapor condensation)			
Protection level	IP54			
Vibration resistance	10-50Hz,EachX,Y,Zof0.7mmDouble amplitude2Hour			
Impact resistance	196mJ/㎡, inX,Y,Zeach10Second-rate			
Indicator Lights/Action Description	Green (power indicator light) illuminates when the sensor is powered normally.			
	Yellow (output signal)1(lights), warning2This indicator light illuminates when an obstacle intrudes into the area.			
	Orange (output signal)2(lights), warning1This indicator light illuminates when an obstacle intrudes into the area.			
	Red (output signal)3(Light) This indicator light illuminates when an obstacle intrudes into the protected area.			
Cable length included	Optional			
DE-42xxx:4indivualNPNInput to switch obstacle avoidance channels.4indivualNPNThe outputs are warnings.1Zone output, warning2Area output, protected area output, fault output				
DE-46xxx:4indivualPNPInput to switch obstacle avoidance channels.4indivualPNPThe outputs are warnings.1Zone output, warning2Area output, protected area output, fault output				

DE-43xxx:RS232-HS,RS485-HS,CAN-HSIt can output both digital signals and raw data.RS485-Modbus,CANOPENOnly outputs switch signals
DE-45xxx:4indivualNPNOutput, supports EthernetTCP/UDPOutput switch signal, EthernetTCP/UDPOutput raw data

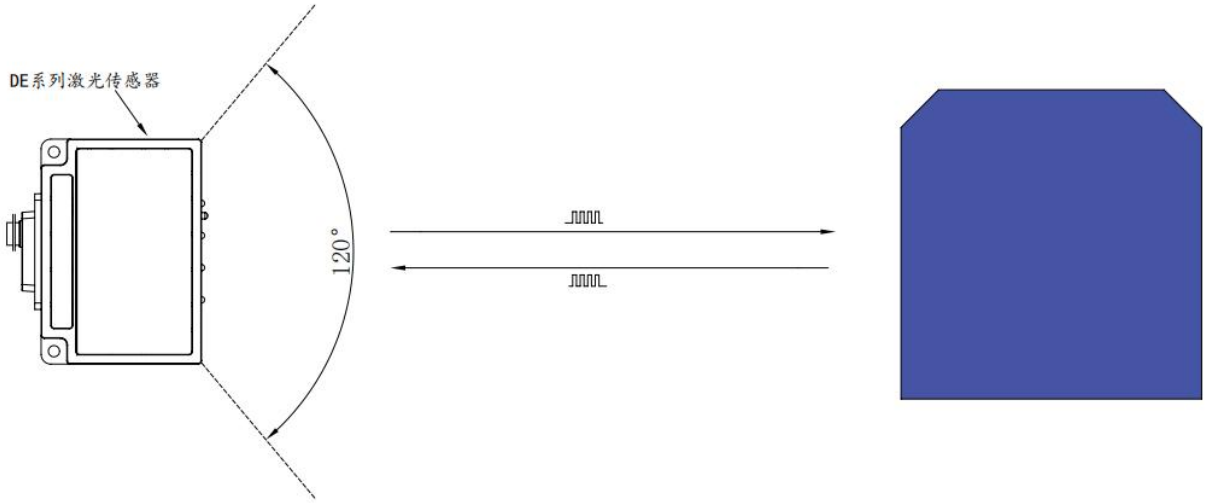
2.2Model Rules

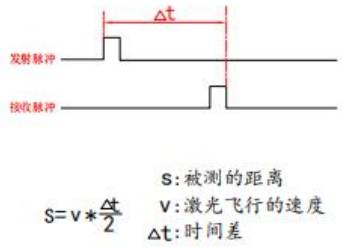


2.3Function

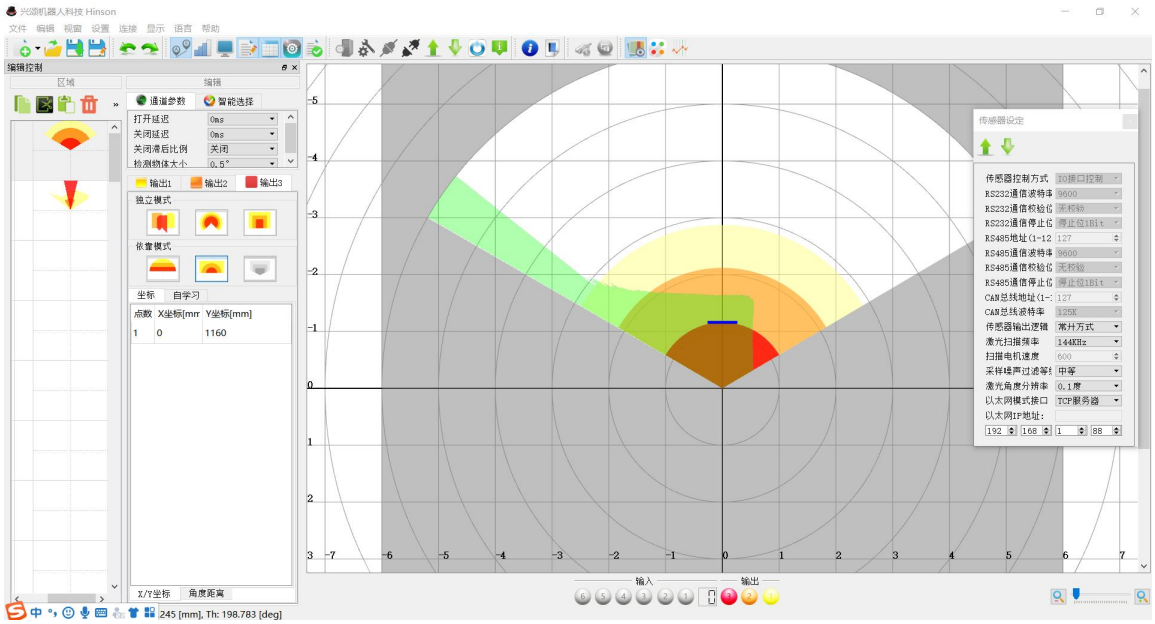
2.3.1Detection principle

Laser scanning sensors are based on the time-of-flight of lasers (TIF).TOFThe measurement principle works by emitting laser beams at uniform time intervals under extremely high synchronization clock conditions. When the laser beam encounters an object, it is reflected back. The laser scanning sensor receives the reflected beam and uses the time difference Δ between emission and reception to determine the source.tTo calculate the distance from the laser scanning sensor to the obstacle.





The system uses a laser beam to perform a two-dimensional scan of the surroundings to obtain an environmental outline. The protected area is then configured through software. Once an object is within the designated area, the corresponding output port of the sensor outputs a signal. The host computer then receives the signal and makes further judgments and processing.

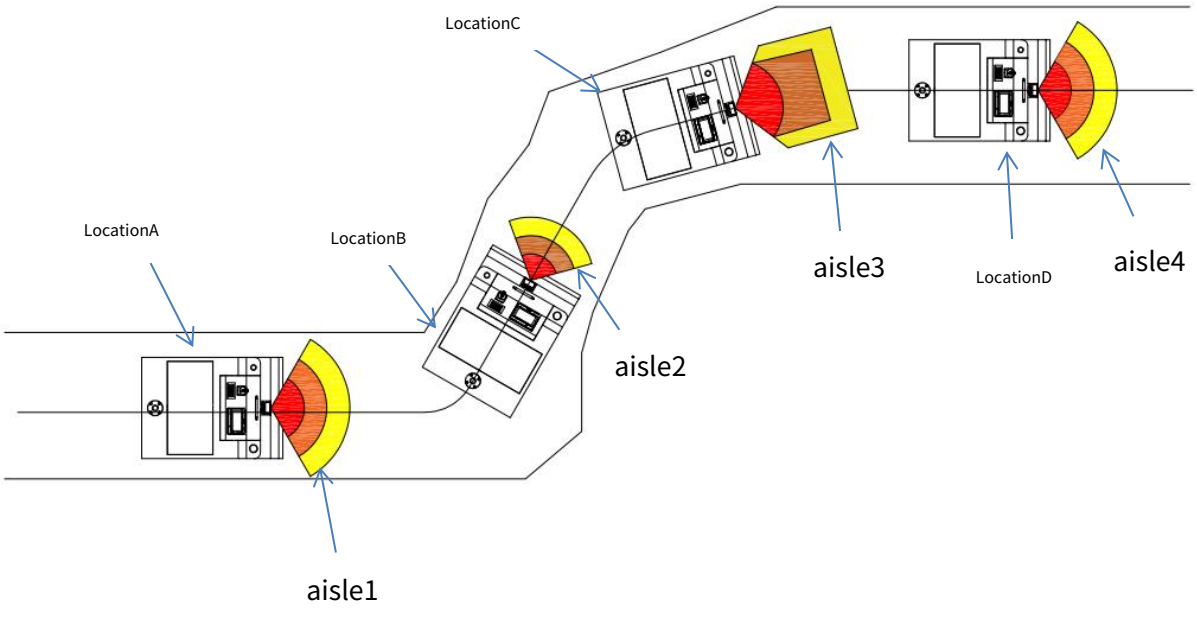


2.3.2Channel switching

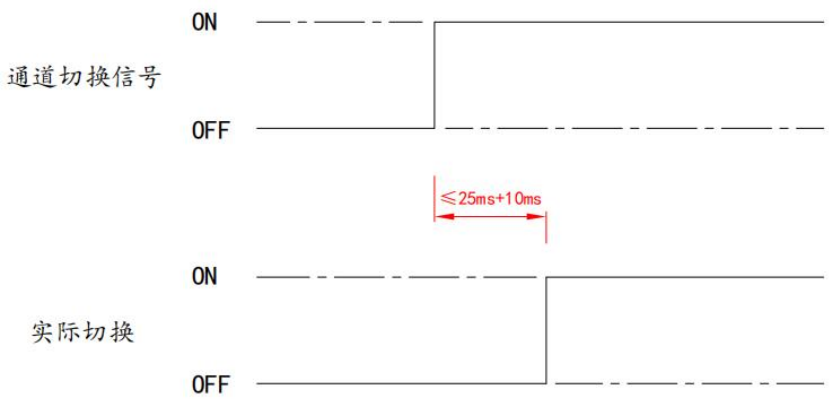
DE-42xxx/DE-46xxxThe maximum number of settings is [number]16Each detection channel can be switched via a digital input to meet the detection needs of different applications.AGVRunning to the lineAWhen positioning, use channels.1Detection of the set sensing range;

whenAGVRunning to the lineBWhen the position changes, the original channel is affected by the external space.1Sensing rangeAGVIf it fails to pass through, switch to a channel with a smaller sensing range setting.2Then you can pass smoothly.

As shown in the picture belowAGVThe usage process is as shown below:



DE-42xxx/DE-46xxxAfter receiving the channel switching signal, due to the switching delay caused by the scanning cycle, the channel switching will not take effect immediately. The switching delay is shown in the figure below:



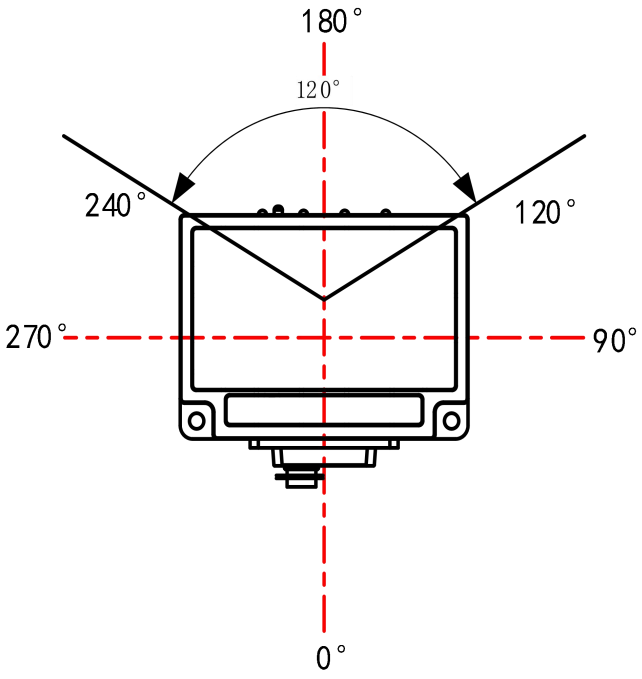
DE-42xxx/DE-46xxxCollect complete120°-240The time of the data is...25ms,DE-42xxx/DE-46xxxUpon receiving a channel switching signal, the process of retrieving and parsing the detection image of the channel from memory takes no more than [time not specified].10msTherefore fromDE-42xxx/DE-46xxxThe entire process from receiving the channel switching signal to successful channel switching takes ≤35ms.

Notice

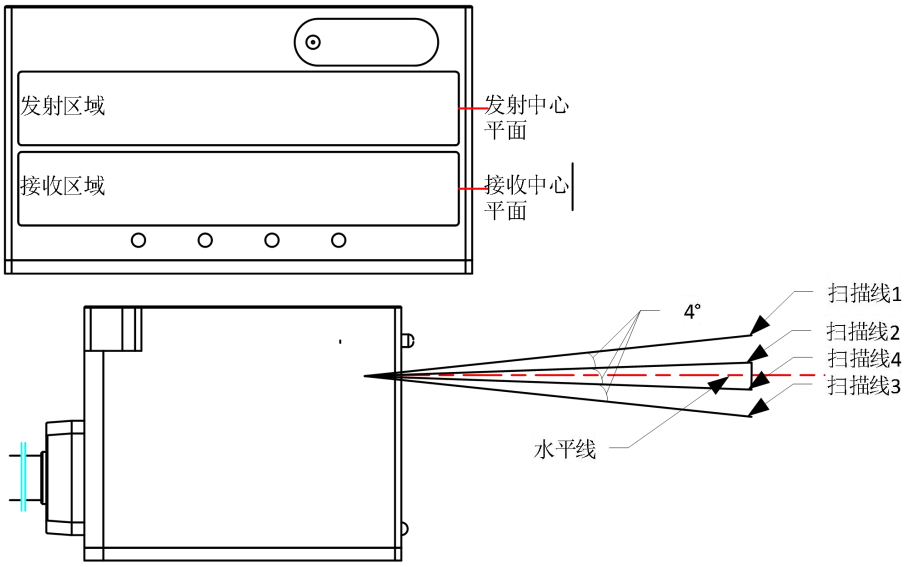
When switching to the no-graphics channel, the sensor will maintain the previous output state with the graphics channel; during this scan cycle (scan cycle is...),25msWhen switching channels within a given timeframe, the output port will retain the state it was in before the channel switch.

2.3.3Detection range

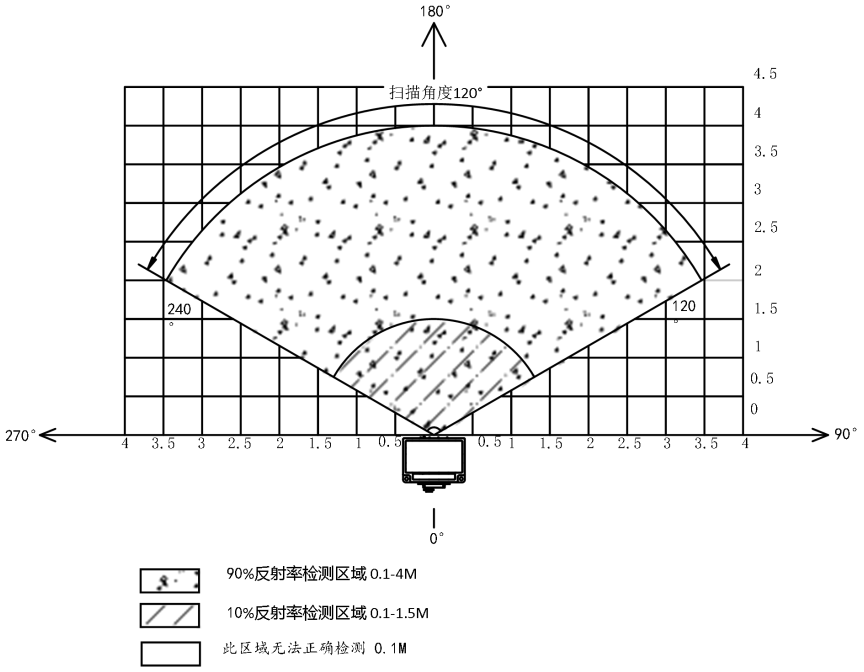
Detection angle: horizontal angle;



Detecting vertical angle

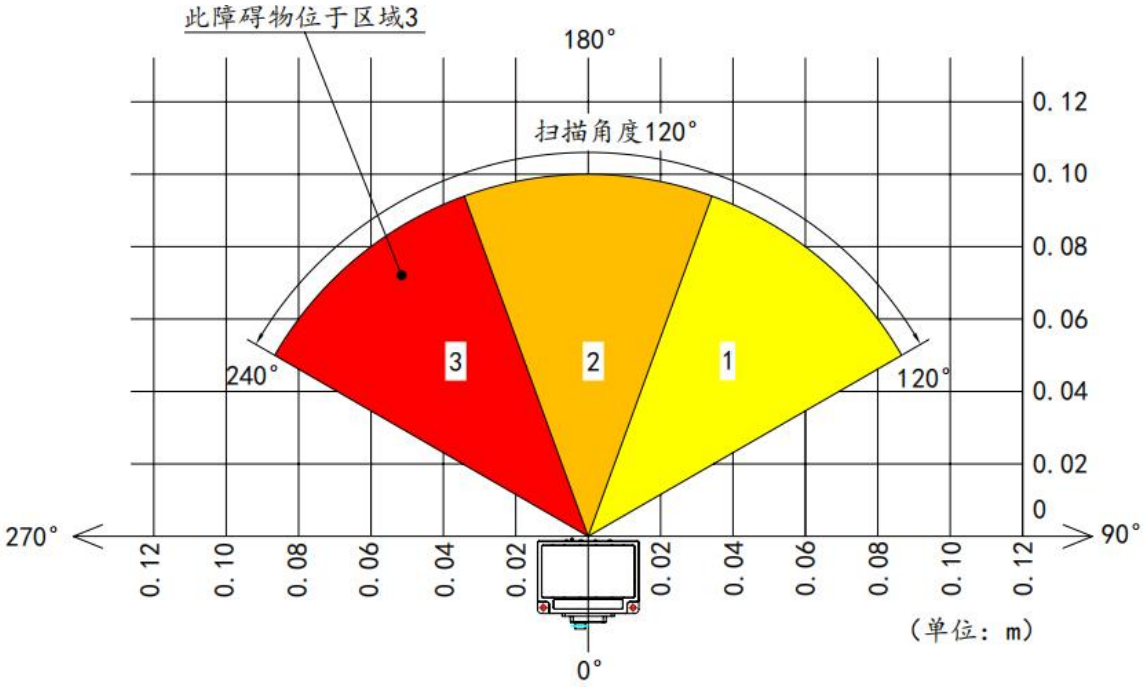


10%and90The detection range for objects with % reflectance is as follows:



0-10cmIt cannot be correctly identified within the specified range;

Detection area settings

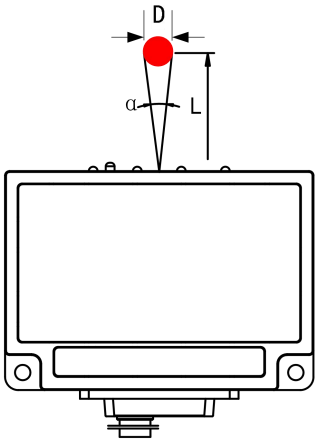


Special note: At an angle of120°, radius is10cmSet output within the range1(warn2(area), output2(warn1(area), output 3(Reserve Area), then the obstacle output will occur regardless of which area it is in.1Output2Output3Both have signal output.

2.3.4 The smallest object diameter that can be detected

DE-42xxx/DE-46xxxThere is a rotating mirror in the middle, and the laser beam will continuously emit laser light as the mirror rotates, thus scanning a maximum angle of . 120Within a fan-shaped region of °, the emitted laser beam will cover a fan-shaped surface, thus maximizing...120Detect objects within a ° area.

DE-42xxx/DE-46xxxAngular resolution is0.5°



$$d = 2\pi L \frac{a}{360}$$

LDistance from the object being measured to the sensor

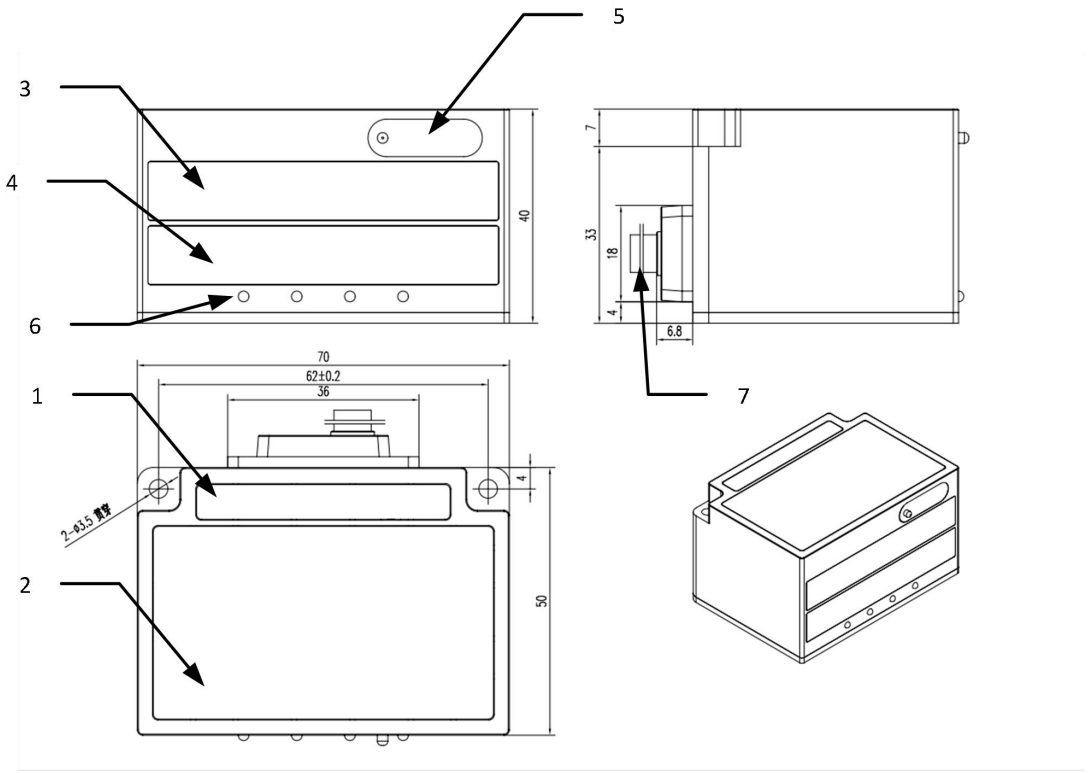
d: Diameter of the object being measured

aLaser scanning angle resolution

For example: whenLfor1000mmAt that time, the laser angular resolution was set to0.5At °, the minimum resolution at which objects can be detected is8.72mm. (4 Abandon5 After the decimal point2Bit).

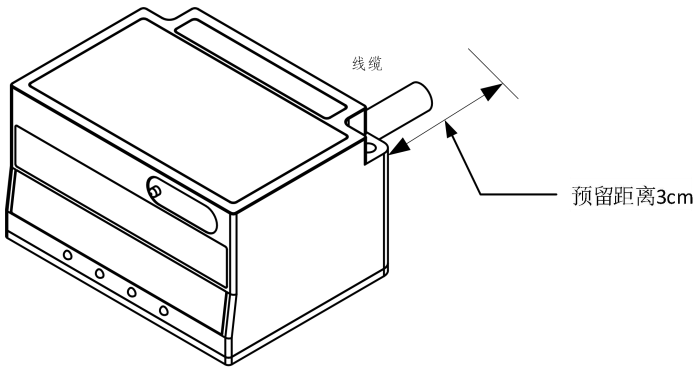
3Install

3.1Dimensions

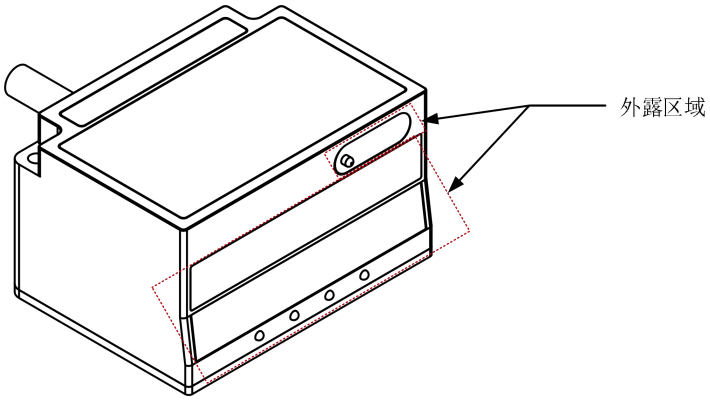


Serial Number	symbol	illustrate	Remark
1	-	Company Label	-
2	-	Line sequence definition label	See details4.1Line definition
3	-	Laser emission area	Please keep this area clean.
4	-	Laser receiving area	Please keep this area clean.
5	-	USB Type-C	DE-42xxx/DE-46xxxpassUSB Type-CConnect to configuration software to set channels and parameters
6		Indicator light area	Displays the current sensor status and area detection status.
7	-	Power supply andIOcable	DE-42xxx/DE-46xxxhave4One switch output

3.2Installation requirements

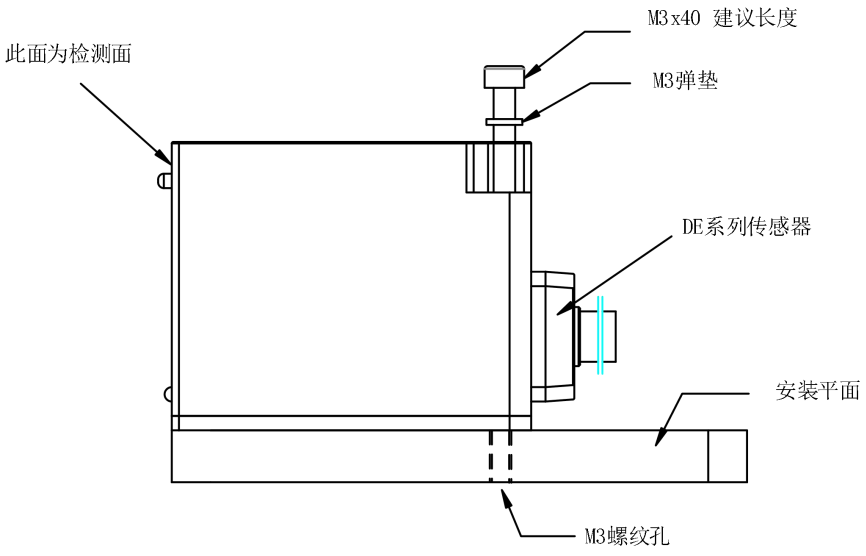


The laser obstacle sensor comes with a cable, and the cable outlet needs to be reserved to avoid excessive bending of the cable.



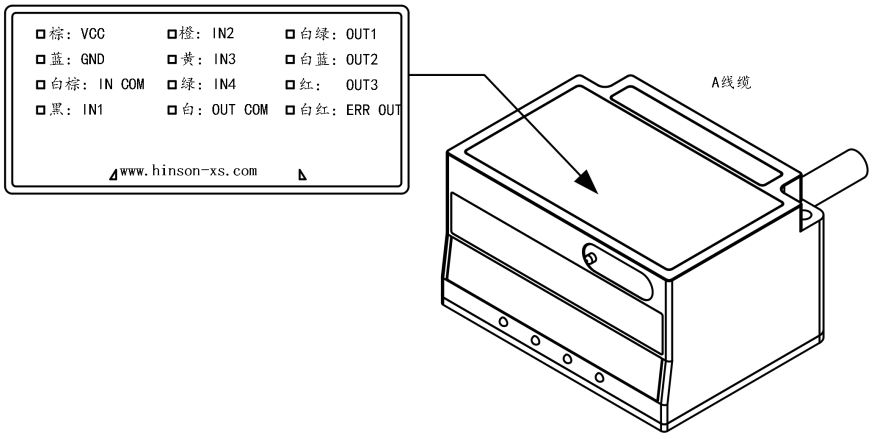
1When installing horizontally, ensure that there are no obstructions on the top and bottom surfaces of the sensor.

2The laser obstacle sensor base should have an indicator light viewing window and a configuration port at the front for easy observation of sensor status and configuration. (Fixed position)



4Connection

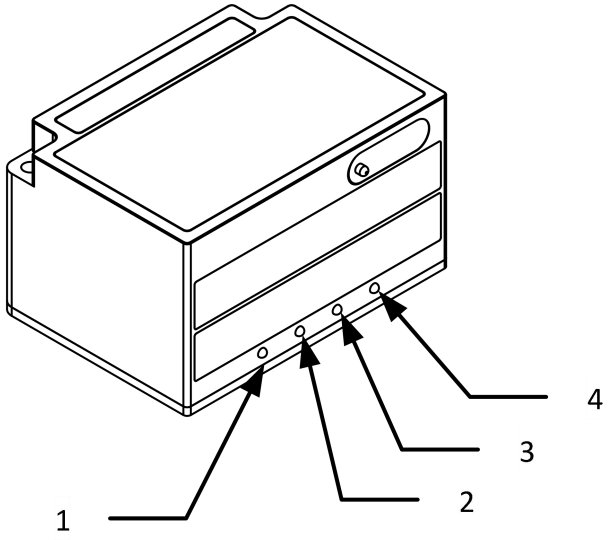
4.1Line definition



DE-42xxx/DE-46xxxLeading toAcable,ACable definitions are as follows:

ACables (power supply and)IOcable)			
color	signal type	Signal	Function Description
Brown	power supply	VCC	8V-30V
blue		GND	negative terminal of power supply
White-brown	digital input	INCOM	DE-42xxxyesNPNValid, input to common terminal,DE-42xxxConnect to the positive terminal of the power supply
			DE-46xxxyesPNPValid, input to common terminal,DE-46xxxcatchGND
black		IN1	Input port1
orange		IN2	Input port2
yellow		IN3	Input port3
green		IN4	Input port4
purple		IN5	Reserved
Ash		IN6	Reserved
white	Switch output	OUTCOM	DE-42xxxyesNPNValid, outputting to the common terminal.DE-42xxxcatchGND
			DE-46xxxyesPNPValid, outputting to the common terminal.DE-46xxxConnect to the positive terminal of the power supply
White and green		OUT1	warn2Zone output
White and blue		OUT2	warn1Zone output
red		OUT3	Protected Area Output
White and red		ERR OUT	Fault output,DE-42xxx/DE-46xxxWhen a fault occurs, the port will still output power, and the power indicator light will flash a certain number of times.

4.2indicator lights

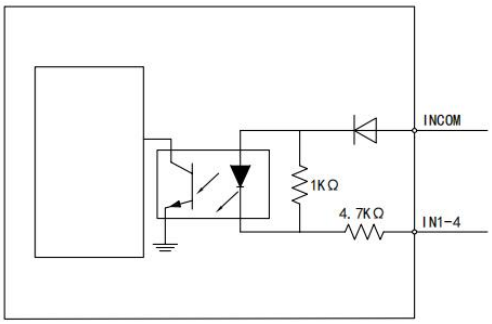


Serial Number	symbol	illustrate	Remark
1	PW	Power/Fault Indicator	DE-42xxx/DE-46xxxWhen the power supply is normal, the power indicator light will be on.
			DE-42xxx/DE-46xxxWhen a malfunction occurs, the indicator light will flash a corresponding number of times; see details.6.1Fault status
2	Q1	OUT1Output indicator light	Obstacle intrusion warning2The zone indicator light is on (corresponding to the output of the configuration software).1)
3	Q2	OUT2Output indicator light	Obstacle intrusion warning1The zone indicator light is on (corresponding to the output of the configuration software).2)
4	Q3	OUT3Output indicator light	The indicator light for an obstacle intrusion into the protected area is on (corresponding to the output of the configuration software).3)

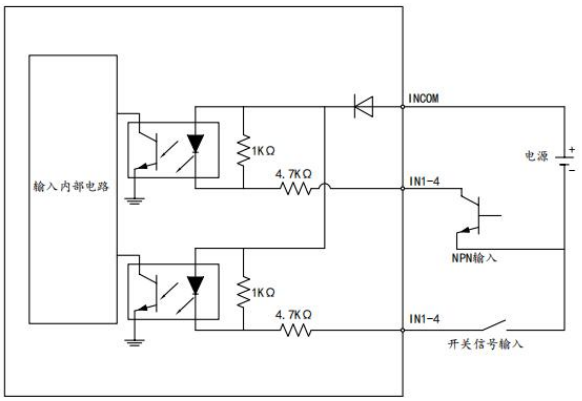
4.3Digital input/output

4.3.1 DE-42xxxDigital input wiring

DE-42xxxThe input ports use optocoupler-isolated inputs, and the electrical schematic is shown below: ON:Status: Input voltage less than0.3V; OFFStatus: Port is floating;

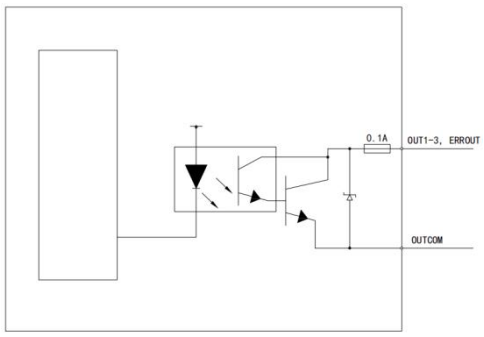


The following is a wiring diagram using transistor input and switch input as examples:

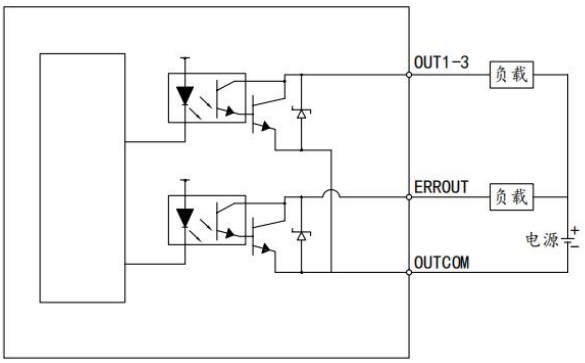


4.3.2 DE-42xxxSwitch output wiring

DE-42xxxThe output port is open collector (NPNThe signal is output with optocoupler isolation; the voltage is [voltage value missing] when a signal is present.0VThe maximum load capacity of the output port is100mAThe internal circuit diagram is shown below: ON:Status: Output voltage less than0.3V; OFFStatus: Port high impedance;

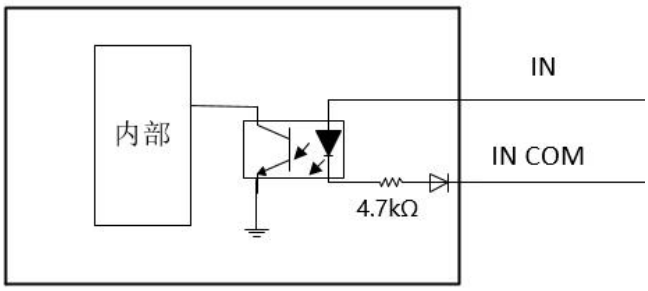


The following isDE-42xxxOutput wiring example:



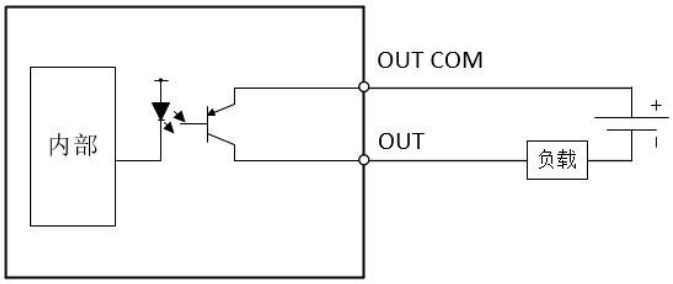
4.3.3 DE-46xxxDigital input wiring

DE-46xxxThe input ports use optocoupler-isolated inputs, and the electrical schematic is shown below: ON:Status: Input voltage is greater than5V; OFFStatus: Port high impedance;



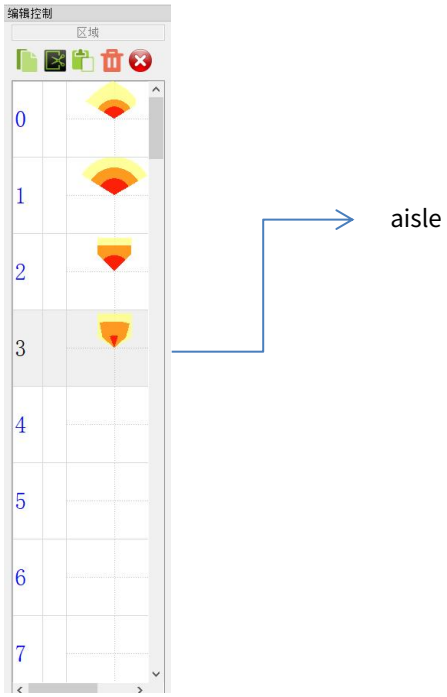
4.3.4 DE-46xxxSwitch output wiring

DE-46xxxThe output port is open collector (PNPThe signal is output with optocoupler isolation. When a signal is present, the output voltage is the same as the input power supply voltage. The maximum load capacity of the output port is...100mAThe internal circuit diagram is shown below: ON:Status: Output voltage greater than5V; OFFStatus: Port high impedance;



4.4Input signal and channel switching

DE-42xxx/DE-46xxxsupply4One input signal to switch0-15Channel 1



ONInput signal present;0FFInput: No signal or open circuit;

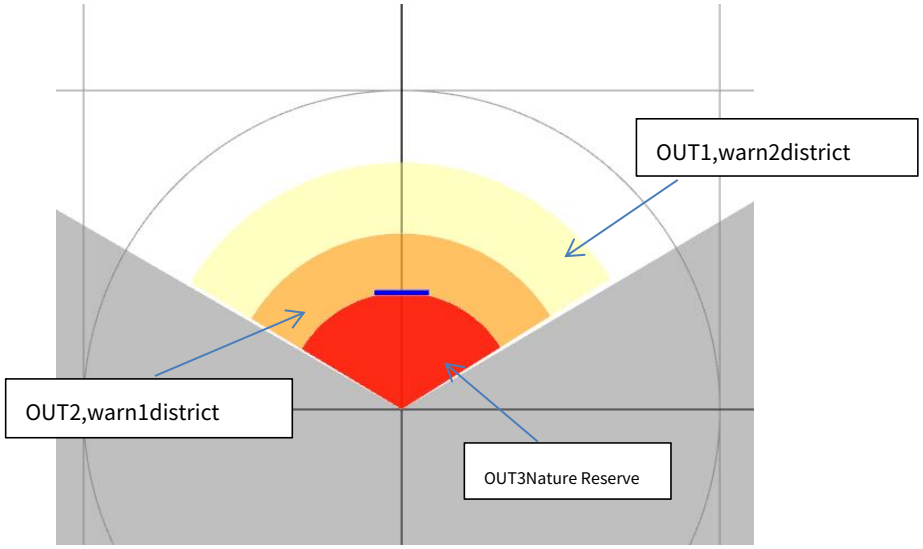
Channel number	IN4	IN3	IN2	IN1
15	OFF	OFF	OFF	OFF
14	OFF	OFF	OFF	ON
13	OFF	OFF	ON	OFF
12	OFF	OFF	ON	ON
11	OFF	ON	OFF	OFF
10	OFF	ON	OFF	ON
9	OFF	ON	ON	OFF

Channel number	IN4	IN3	IN2	IN1
8	OFF	ON	ON	ON
7	ON	OFF	OFF	OFF
6	ON	OFF	OFF	ON
5	ON	OFF	ON	OFF
4	ON	OFF	ON	ON
3	ON	ON	OFF	OFF
2	ON	ON	OFF	ON
1	ON	ON	ON	OFF
0	ON	ON	ON	ON

4.5Output signal corresponding

port	Function	Output logic
OUT1	Used for remote obstacle warning and deceleration;	Default: Normally closed, can be changed to normally open via configuration software;
OUT2	Used for normal obstacle detection and normal stop;	Default: Normally closed, can be changed to normally open via configuration software;
OUT3	Used for near-end emergency stop;	Default: Normally closed, can be changed to normally open via configuration software;
ERR	Used for sensor fault status output;	Default: Normally closed, can be changed to normally open via configuration software;

warn2District, Warning1The definitions of districts and protected areas are as follows:



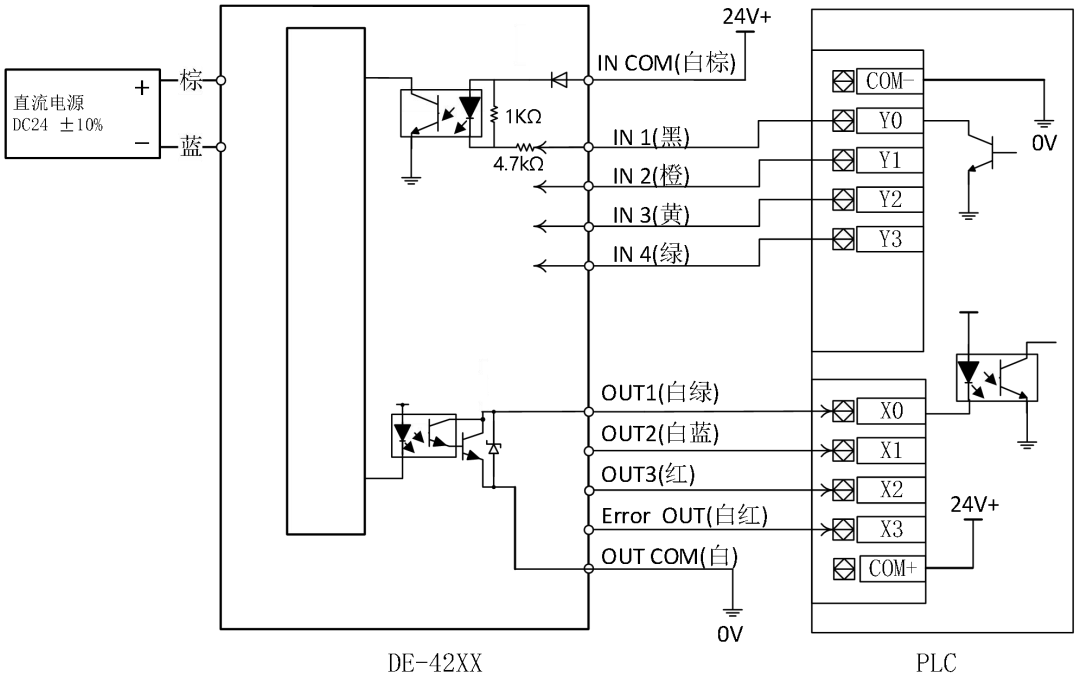
Notice

The detection output will only be generated when the corresponding output includes a drawn graphic.

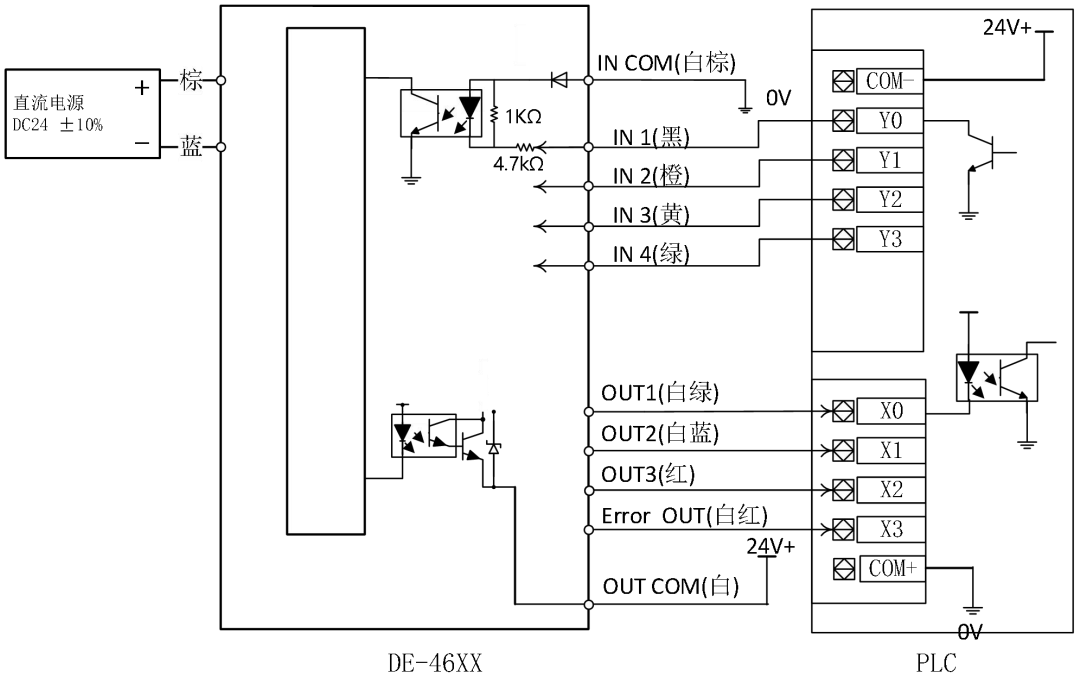
The input and output ports must not be short-circuited or connected to loads exceeding the specified current, otherwise the sensor will be damaged.

4.6 PLCConnection Instance

4.6.1 DE-42xxxandPLCconnection



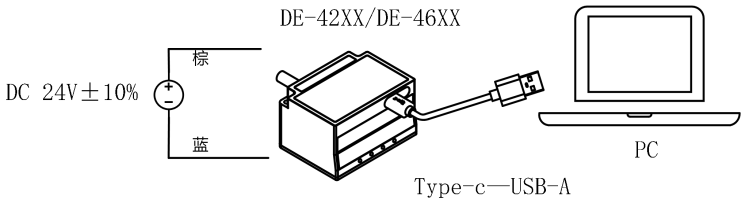
4.6.2 DE-46xxxandPLCconnection



5Configuration software usage

5.1Sensor connection

USBconnect



PC version requirements	Cable requirements
1)Windows 7The above systems; 2The port type isUSB-A-TYPE-Cport; 3)supportCP2102XIf you don't have the series driver, please visit the website. www.hinson-xs.comOr consult after-sales technical support for assistance;	1) USB-TYPE-CThe cable must be capable of data transmission;

5.2Configuration software operation

Get software

1Access the company website to obtainwww.hinson-xs.com 2

Consult sales and technical support personnel to obtain

Software runtime environment

System Requirements	Windows XPThe above systems
Display resolution	1280*720above
USBconnect	USB-Aport

Software decompression

1Double-click to open;

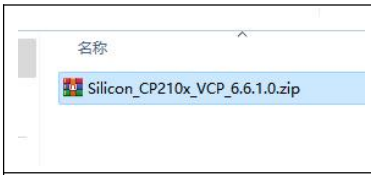
2The file will create a new folder in the current directory after self-extraction.

3Open the folder and select "Run Software";

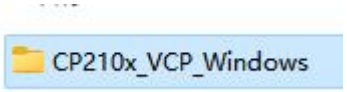
Install drivers

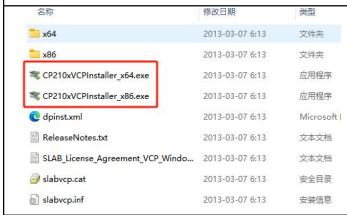
The driver needs to be installed when connecting the sensor for the first time.

Get Driver	
	Open the configuration software file.USBdriver file



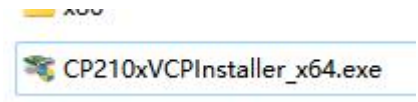
Unzip





32System installation:CP210xVCPInstaller_x86.exe

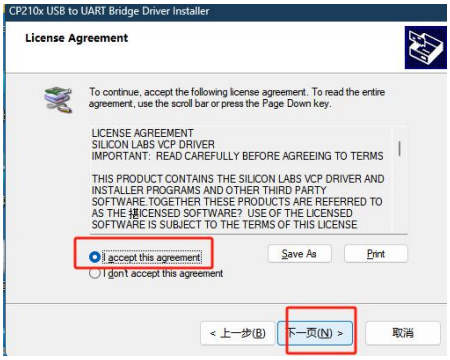
64System installation:CP210xVCPInstaller_x64exe



by64Taking the bit system as an example, double-click to open

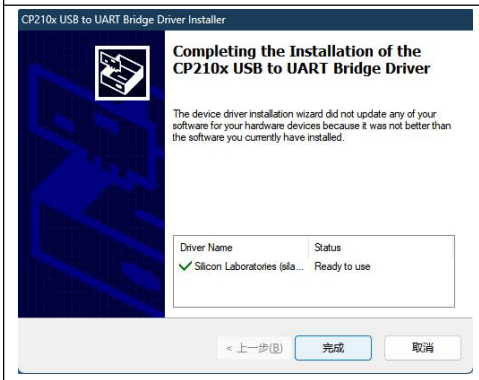
CP210x USB to UART Bridge Driver Installer
Welcome to the CP210x USB to UART Bridge Driver Installer
This wizard will help you install the drivers for your CP210x USB to UART Bridge device.
To continue, click Next.
< 上一步(B)
下一页(N) >
取消

Click Next;


CP210x USB to UART Bridge Driver Installer
License Agreement
To continue, accept the following license agreement. To read the entire agreement, use the scroll bar or press the Page Down key.
LICENSE AGREEMENT
SILICON LABS VCP DRIVER
IMPORTANT: READ CAREFULLY BEFORE AGREEING TO TERMS
THIS PRODUCT CONTAINS THE SILICON LABS VCP DRIVER AND INSTALLER PROGRAMS AND OTHER THIRD PARTY SOFTWARE TOGETHER THESE PRODUCTS ARE REFERRED TO AS THE LICENSED SOFTWARE? USE OF THE LICENSED SOFTWARE IS SUBJECT TO THE TERMS OF THIS LICENSE
I accept this agreement
I don't accept this agreement
Save As
Print
< 上一步(B)
下一页(N) >
取消

Check

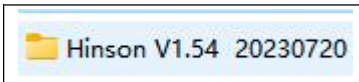
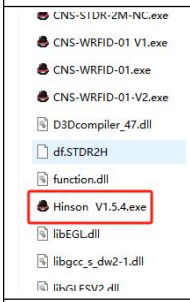
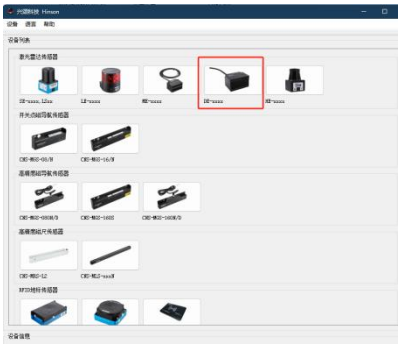
Click; Next

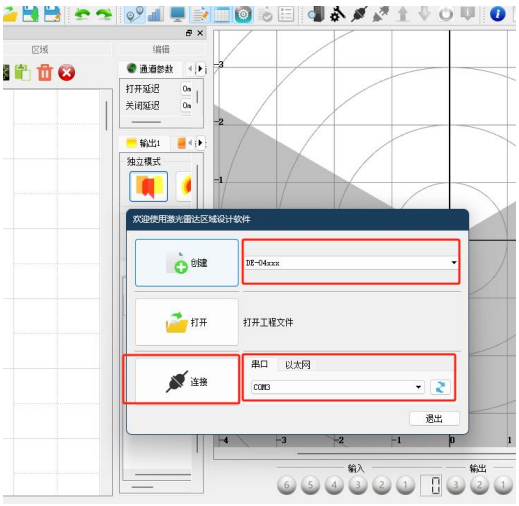

CP210x USB to UART Bridge Driver Installer
Completing the Installation of the CP210x USB to UART Bridge Driver
The device driver installation wizard did not update any of your software for your hardware devices because it was not better than the software you currently have installed.
Driver Name
Status
Silicon Laboratories (sila...
Ready to use
< 上一步(B)
完成
取消

Driver installation complete;

	Driver installation complete. Open your computer -- Device Manager -- Ports (COM and LPT); The system can recognizeCOM口号;

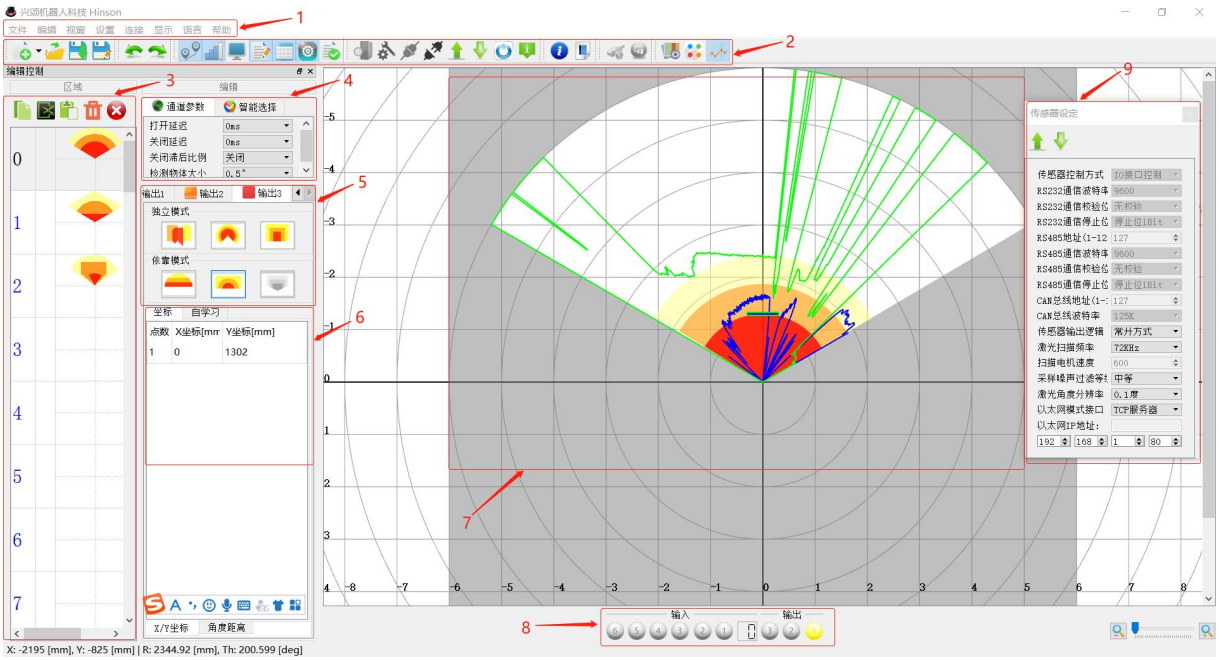
5.3Run configuration software

	Unzip the configuration software file
	Open the folder, find the configuration software, and double-click to open it with the left mouse button;
	Select to -DE-xxxxClick to open;
	A prompt will appear when you open it for the first time.

	chooseDE-4XXXseries; Connection: Confirm driver installationCOMmouth;

5.4Introduction to the configuration software interface

DE-42xxx/DE-46xxxAfter connecting to the configuration software, the following interface will be displayed:



5.4.1Menu bar

First-level menu	Secondary menu	Level 3 menu	Corresponding icon	Remark
document	New file	-		New file
	Open file	-		Open the created file
	Save file	-		Save the edited file
	Save As	-		Save the edited file as...
	quit	-		Exit the current configuration software interface
edit	Cancel	-		Undo the previous operation
	Redo	-		Restore the previous operation
	copy	-		Copy the detection pattern of a specific detection channel
	Cut	-		Cut the detection pattern of a specific detection channel.
	Paste	-		The detection pattern from one detection channel was pasted onto another channel.

	delete	-		Delete the currently selected detection channel image
	Delete all	-		Delete all detection channel graphics
	Application Settings	-		-
Windows	Windows	edit		Click the icon to configure the software to display the edit function box.
		monitor		Click the icon to configure the software to display the monitoring status.
		Sensor settings		Click the icon to configure the software and display the sensor parameter setting function box.
		Input/output simulation		Click the icon to display the sensor input/output simulation function box.
		Self-check status		Click the icon to display the sensor self-test status.
	distance	-		Click to close or show the current sensor status.120Scan profile within ° range
	strength	-		Click to close or show the reflectivity of obstacles.
	Data list	-		The configuration software does not support the output of distance data for all current detection points; this option is unavailable.
set up	serial port	-		The sensor does not support serial port connection configuration software; this option is unavailable.
	Ethernet	-		Click to select Ethernet connection configuration software
	Serial port settings	-		The sensor does not support serial port connection configuration software; this option is unavailable.
	Ethernet settings	-		Click to view the current sensor Ethernet address
connect	interface	serial port		The sensor does not support serial port connection configuration software; this option is unavailable.
		Ethernet		
	Connecting devices	-		Click to connect sensors and configuration software.
	Disconnect device	-		Click to disconnect the sensor and configuration software.
	Upload data	-		Click to upload the sensor's configured detection channel image and parameters.
	Download data	-		Click to download the test channel graphic and various parameters.
	Restart the device	-		After setting the detection channel pattern and its parameters, click this icon to restart the sensor for the parameters to take effect.
	Sensor information	-		-

show	Graphical display	-		Click this icon, sensor120°Scan profile displayed as a planar graphic
	Point cloud display	-		Click this icon, sensor120°Scanned contour displayed as point cloud
	Line display	-		Click this icon, sensor120°Scan outline displayed as lines
language	Simplified Chinese	-		Click this icon to configure the software to display in Chinese.
	English	-		Click this icon to configure the software to display in English.
help	about	-		Click this icon to configure the software to display version information.
	guide	-		-

5.4.2Shortcut icons

All shortcut icons are in the [section/section/etc.].1Explanations are provided in some menu items.

5.4.3Detection channel graphic editing

DE-42xxx/DE-46xxxsupport0-15Each of the detection channels supports [number] detection channels.3Output of detection graphics for each detection area. DE-42xxx/ DE-46xxxIt can be doneIN1,IN2,IN3,IN4The signal combination selects the channel and outputs the channel.OUT1,OUT2,OUT3Detect whether there are any obstacles intruding into the detection area.

5.4.4Channel parameters and intelligent selection

Enable delay:0-500ms

The intrusion time is set for a duration and then an output signal is generated to filter out occasional flashing objects or interference.

Turn off delay:0-500ms,

An object enters and outputs a signal, then maintains the output signal for a set time after the object leaves, and then resumes output.

When used for obstacles, the sensor output port sometimes jumps frequently due to intermittent operation.

Closure lag ratio:0-10%,

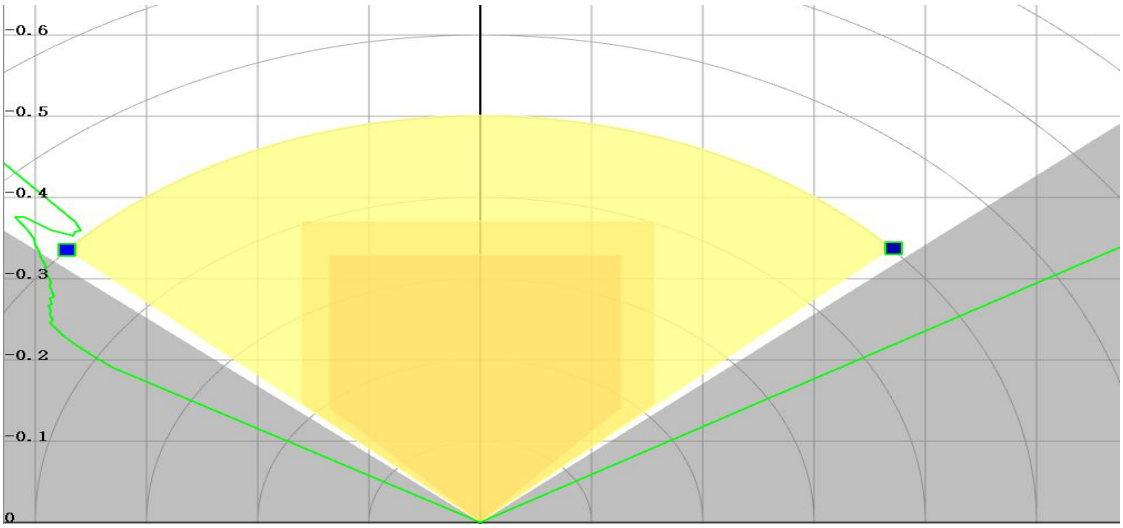
Once an object intrusion is triggered, the object needs to move away to a set proportional distance before the system recovers.

Detecting object size:0.5°-5Adjusting the size of the object being detected can reduce false triggering of the sensor caused by dust in the air or unclean sensor detection mirror.

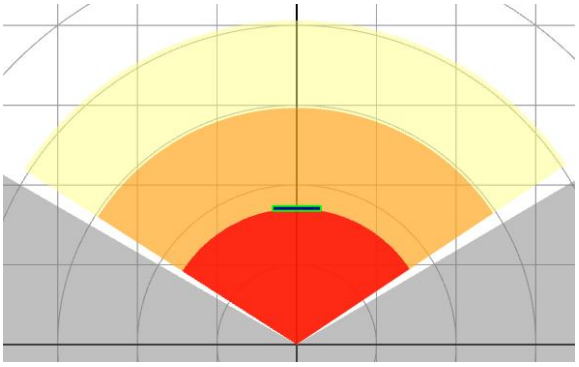
	Only applicableDE-43XX/DE-45XXSeries Sensors Not applicableDE-42xxx/DE-46xxxSeries Sensors

Output1Output2Output3Edit mode.

Independent Mode: In independent mode, you can set the sector and its rectangle separately. The drawn graphic cannot exceed the range.120-240°.

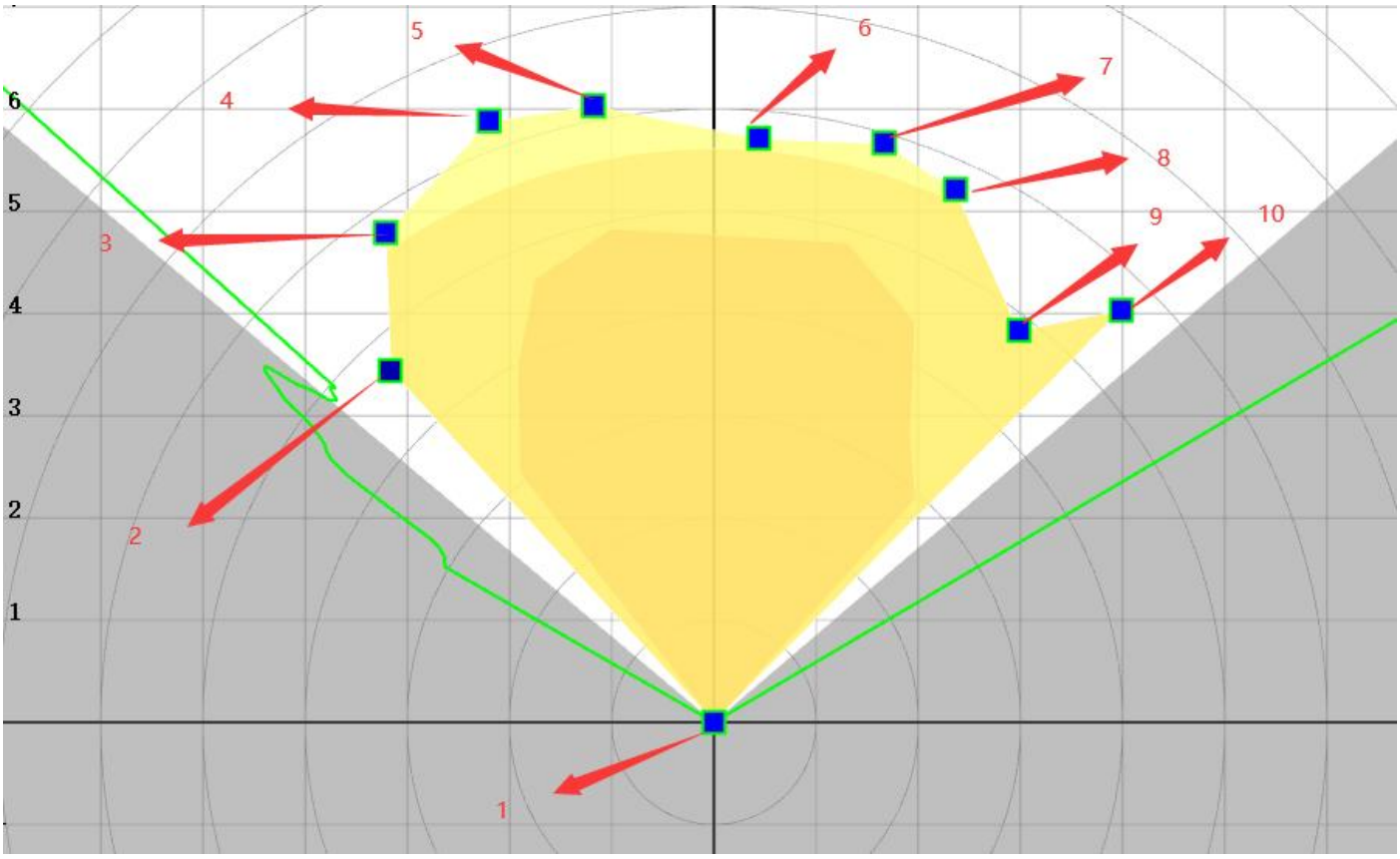


Dependency mode: After setting the output1After obtaining the graphic, you can choose to copy and output it at different scales based on the pattern.1The graphic.



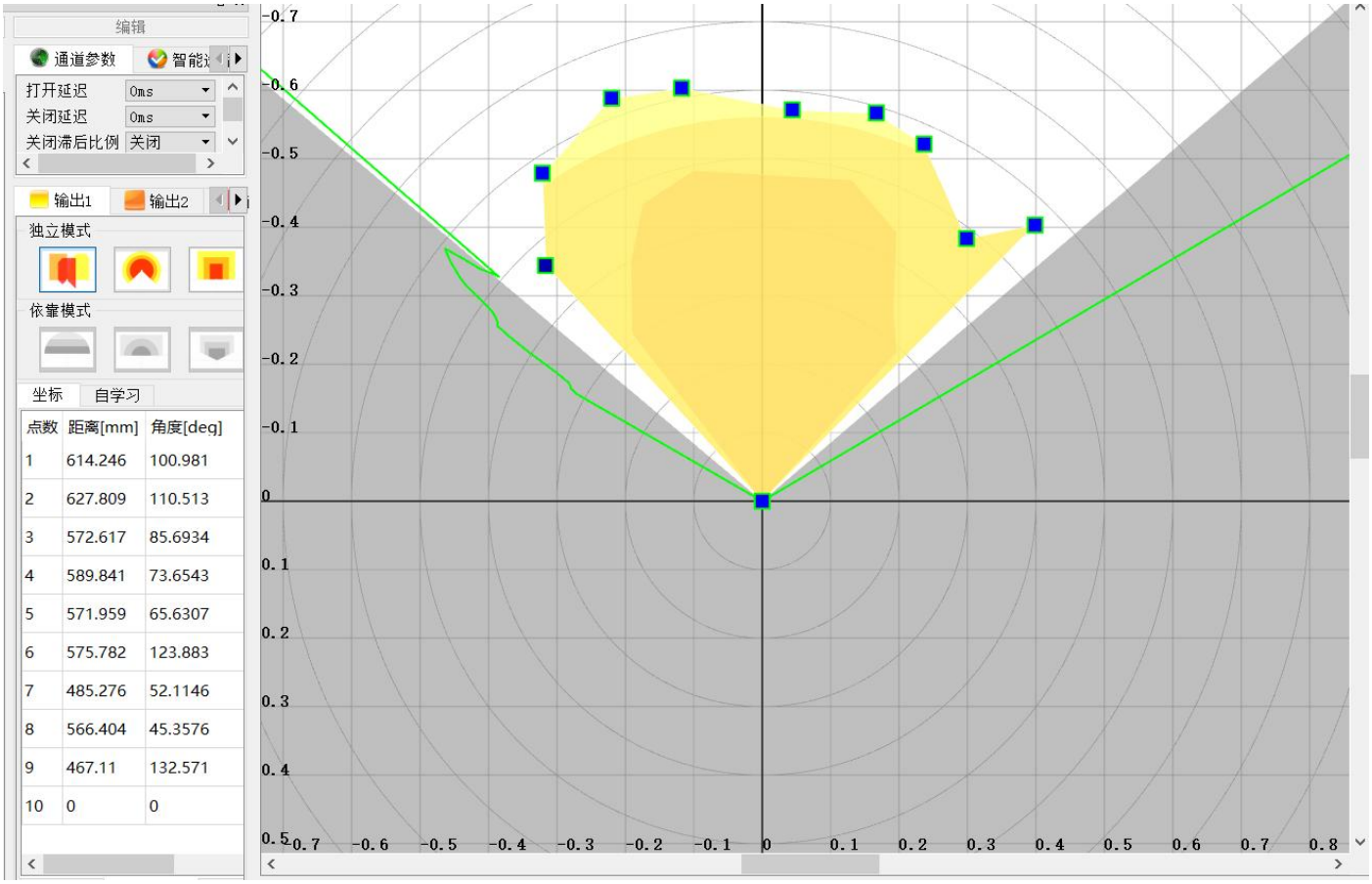
5.4.5Coordinates and their angle values

Coordinates of points on an irregular shape in independent mode (X,Y):



Note: The first1The point is the origin of the coordinate system.

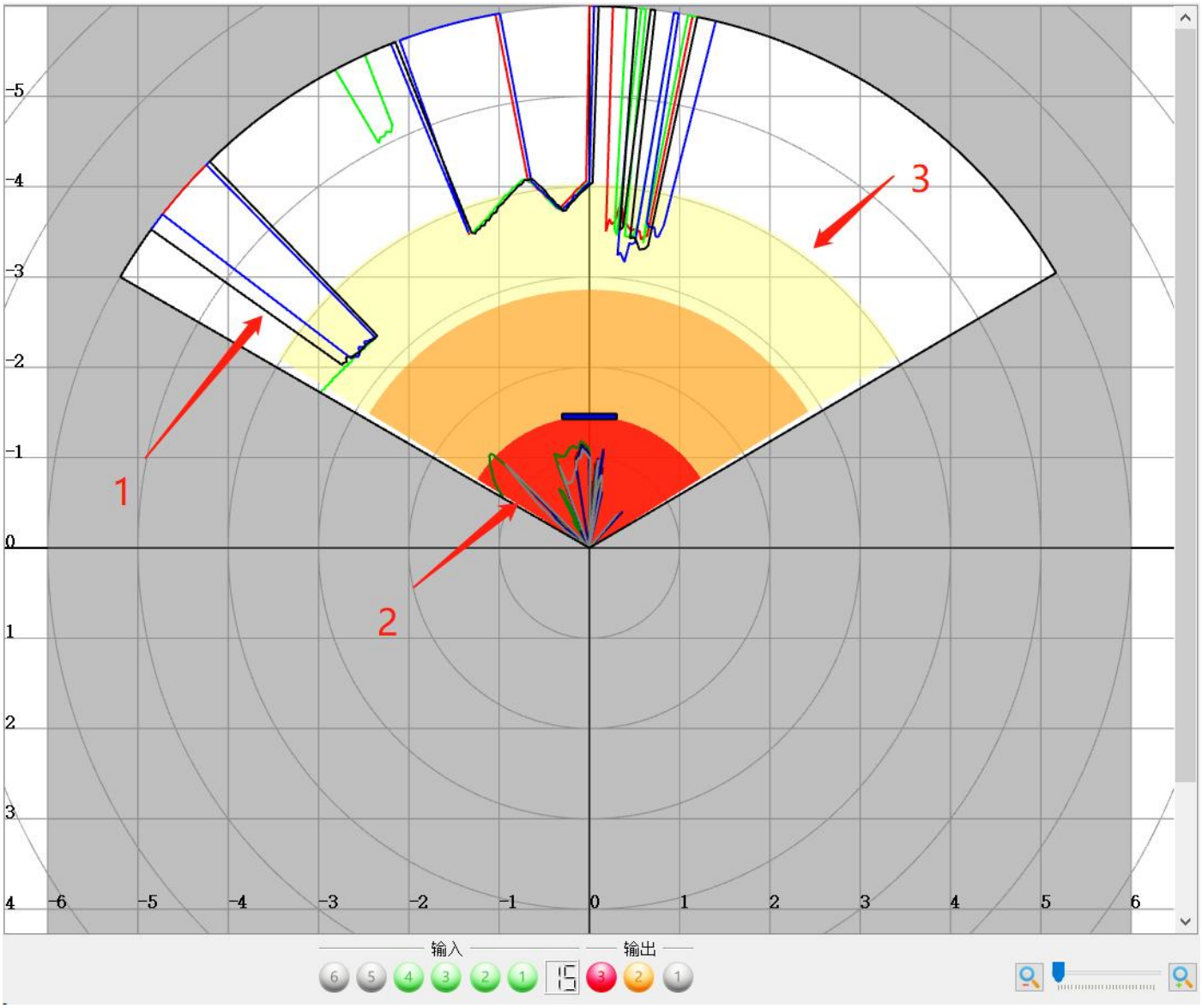
In independent mode, the distances and angles between each point of the irregular shape and the origin are as follows:



点数	距离[mm]	角度[deg]
1	614.246	100.981
2	627.809	110.513
3	572.617	85.6934
4	589.841	73.6543
5	571.959	65.6307
6	575.782	123.883
7	485.276	52.1146
8	566.404	45.3576
9	467.11	132.571
10	0	0

Note: The first1The point is the origin of the coordinate system.

Scan contour, reflectivity, and detection channel graphic display area:



Remark:1The lines show the scanned outline.2The lines indicate the reflectivity.3It is the set detection pattern.

Current channel and current channel output1(OUT1),2(OUT2),3(OUT3)state

5.4.6Sensor parameter settings

Parameter name	parameter	Parameter Description
Sensor control method	IO interface control (default) RS232 communication control RS485 Communication Control CAN bus control Modbus protocol control CANOPEN protocol control	series: support DE-43XX series support: RS232 communication control; RS485 Communication Control; CAN bus control; Modbus protocol control; CANOPEN protocol control DE-42XXX and DE-46XX series: IO interface control
RS232 communication baud rate	1: 9600bps 2: 19200bps 3: 38400bps 4: 57600bps 5: 115200bps (default)	RS232 communication baud rate
RS232 communication check digit	1: No verification (default) 2: Odd parity 3: Even parity	RS232 communication parity bit
RS232 communication stop bits	1:1 Bit (Default) 2: 1.5 Bit 3:2 Bit	RS232 communication stop bit
RS485 address	1-127 (default 127)	RS485 address
RS485 baud rate	1: 9600bps 2: 19200bps 3: 38400bps 4: 57600bps 5: 115200bps (default)	RS485 baud rate
RS485 communication check digit	1: No verification (default) 2: Odd parity 3: Even parity	RS485 communication check bit,
RS485 communication stop bits	1:1 Bit	RS485 communication stop bit

	2: 1.5 Bit 3:2 Bit (Default)	**The MODBUS protocol uses a fixed 2 stop bits;**
CAN bus address	1-127 (default)	CAN bus address
CAN bus baud rate	1:125K 2:250K 3:500K 4: 1000K (default)	CAN bus baud rate
Sensor output logic	Normally closed mode (default) Normally open	OUT1-OUT3Port output logic Normally closed mode An object was detected;OUT1-OUT3-ERR(Disconnected) No object detected;OUT1-OUT3-ERRNormally open (in conduction state) An object was detected;OUT1-OUT3-ERR(In conduction state) No object detected;OUT1-OUT3-ERR(In the disconnected state)
Laser scanning frequency	72K 144K	The sensor's measurement frequency is set and cannot be changed; **Only applicableDE-45XXseries**
Scanning motor speed	600	default600Unchangeable settings
Sampling noise filtering level	closure Simple medium strict	Set the sensor noise filtering level. The higher the level, the less jitter the sensor measurement, but the greater the distortion of the image edges.
Laser angular resolution	0.1° 0.2°	Set the sensor scanning angle resolution; **Only applicableDE-45XXseries**
Sensor multi-line selection	Scan 1.2.3.4	The current detection line number used by the control sensor;
Ethernet mode interface	TCP server mode (default) UDP mode	Set communication mode **Only applicableDE-45XXseries**
Ethernet IP address	192.168.1.1-255 (default 88)	Setting up the sensorIPThe address and fixed network segment cannot be changed. **Only applicableDE-45XXseries**

5.5Icon Function

5.5.1 Input/output simulation

The input/output simulation function simulates the laser sensor within the configuration software.IOThe port's actions, or setting simulation conditions to select automatic port switching.

Input port simulation	Enable input port emulation. Input port actions are disabled when emulation is enabled. This function can simulate input port switching of area channels.
Output port simulation	Enable the output port simulation function. When the simulation function is enabled, the output port movement does not follow the actual movement of the sensed object. This function can simulate the output port movement.
Abnormal state simulation	Enable the abnormal state port output simulation function. When the simulation function is enabled, the sensor fault output port action does not follow the actual sensor abnormal state action. This function can simulate the action of the sensor fault output port.
Intelligent selection simulation	Check the "Smart Selection Simulation" box to enable the smart selection simulation function. When smart selection simulation is enabled, the automatic sensor area switching function is disabled. This function simulates the conditions for smart selection to allow the sensor to automatically switch areas.

hint When an abnormality is detected in the sensor's input/output, the sensor is tested using the input/output port simulation function.

5.5.2 Network port settings

In relation to sensor modelDE-45XXApplicable when connecting in series, automatically locates the sensor.IPaddress.

5.5.3 Serial port settings

Setting parameter configuration portMicro USBThe parameters. The sensor via...USBAfter connecting, in the computer systemCOMPort connection.

parameter	Parameter information
serial number	COM-*
Communication rate	576000bps
Data bits	8-bit
Check bit	None
Stop bit	1 person
Flow control	None

hintA successful connection can only be achieved by using the default parameters.

5.5.4Connect and disconnect

Connect to the device, read sensor data, and then disconnect from the device.

After a successful connection, data will be uploaded from the sensor.

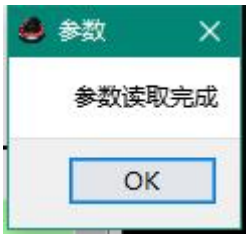
If no device is connected, a read/write timeout warning will be displayed.

After receiving the warning, troubleshoot according to the fault status.

- **Upload**

Upload parameters from the sensor and read the current parameters set inside the sensor and the graphic data to be drawn.

Upload successful message



If no device is connected, a read/write timeout warning will be displayed.

After receiving the warning, troubleshoot according to the fault status.

- **download**

Download the parameters set in the configuration software and the graphic data drawn into the sensor.

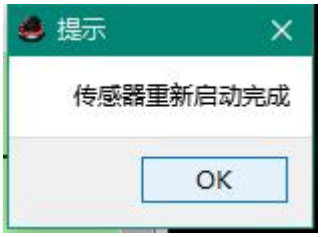
If no device is connected, a read/write timeout warning will be displayed.

After receiving the warning, troubleshoot according to the fault status.

- **Restart**

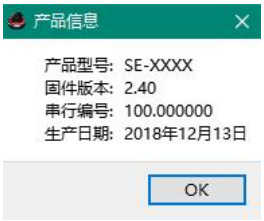
Control sensor restart, used for sensor initialization and parameter settings taking effect.

The restart process is approximately5Second.

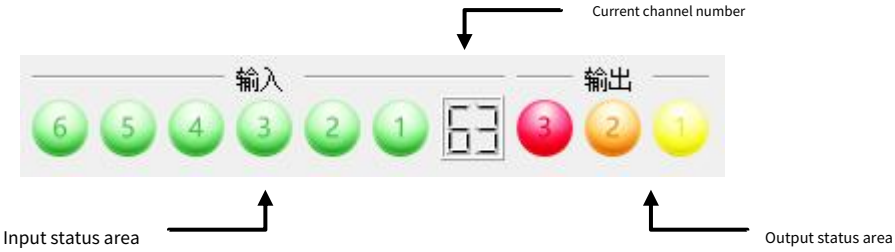


- **Sensor information**

Get the firmware version information of the current sensor.

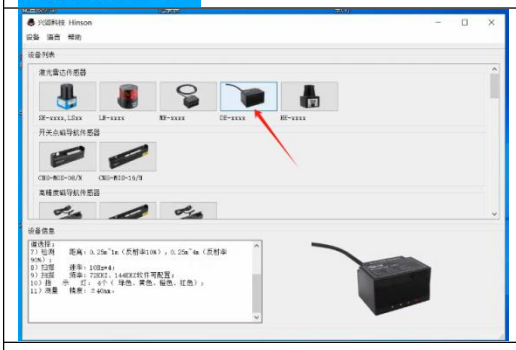
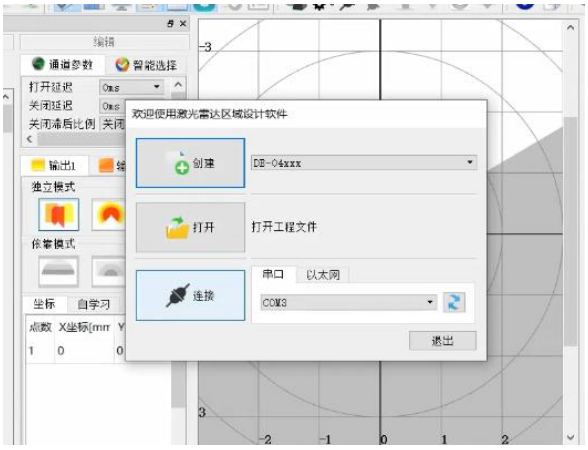


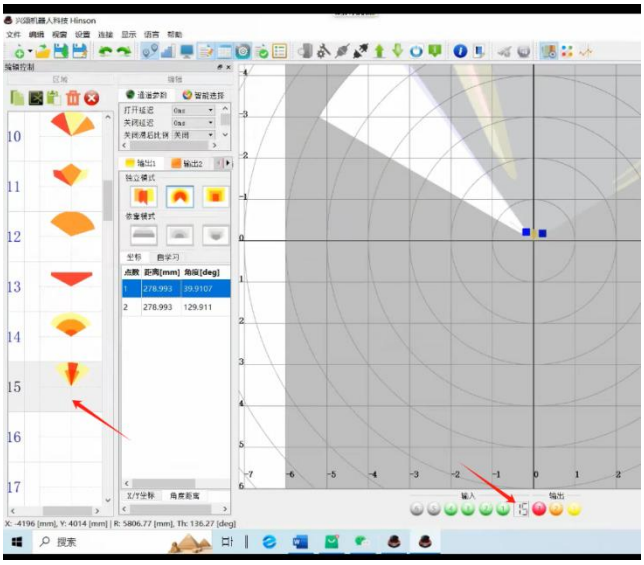
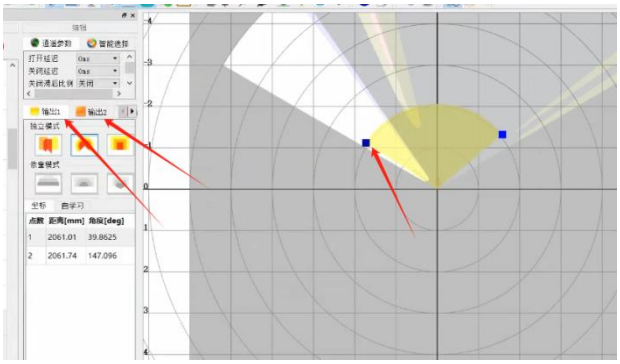
5.6Sensor status bar

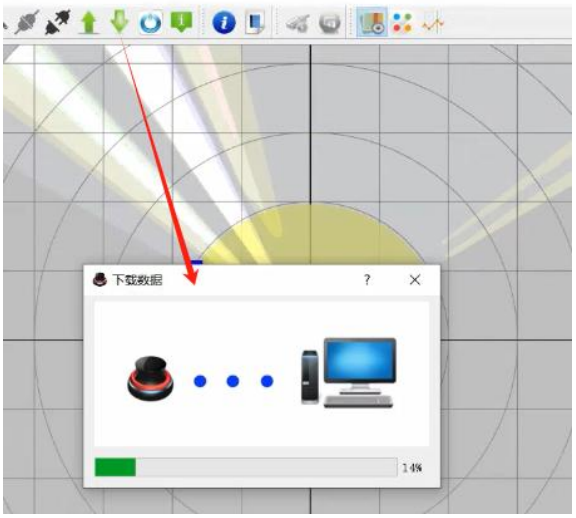


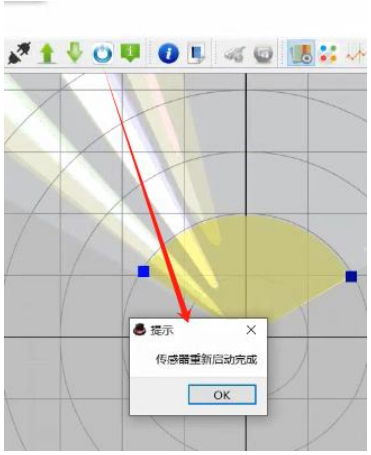
Input status area	Displays the current input port status.1-4The number represents respectivelyIN1-IN4Input status; Green: No signal input; Gray: Signal input;
Current channel number	The displayed value is the channel number currently active for the sensor.
Output status area	Displays the current output port status.1-3The number represents respectivelyOUT1-OUT3Output status; and parameter settings.**Sensor output logic**Related: Normally closed mode (default) Color: Object detected;OUT1-OUT3(Disconnected) Gray: No object detected;OUT1-OUT3Normally open (in conduction state) Color: Object detected;OUT1-OUT3(In conduction state) Gray: No object detected;OUT1-OUT3(In the disconnected state)

5.7Quick setup steps

	
	According to the electrical wiring and defined area number, click the left mouse button to select the area channel to be edited, and then drag the middle blue dot in the editing area to draw the required graphic.



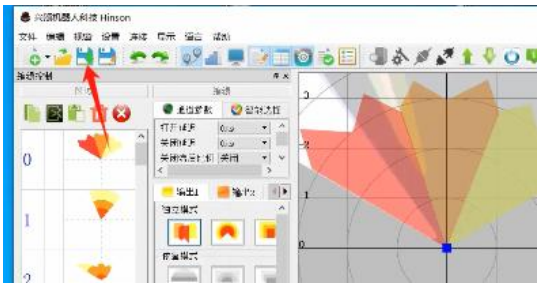
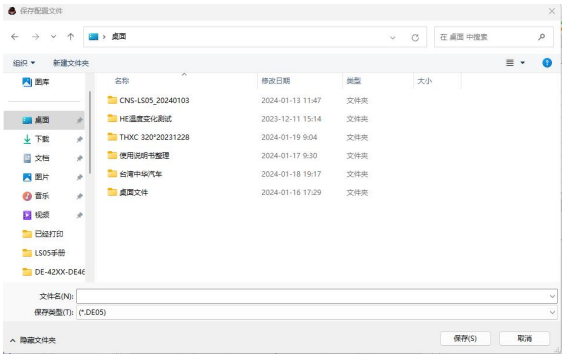


After editing, click the "Download Data" button to download the data to the sensor, and then click the "Restart Device" button to restart the laser scanning sensor online.

Note: A restart is required for the changes to take effect after downloading!

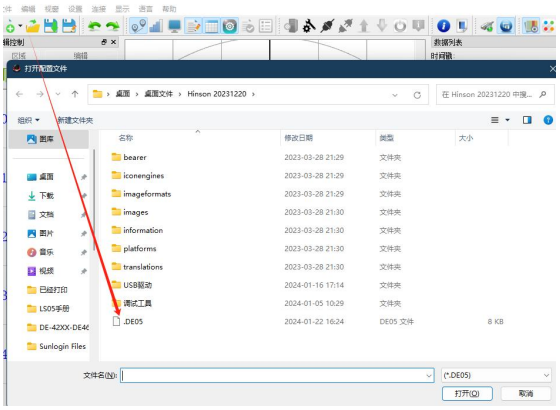
5.8Configure export and import

5.8.1Configuration export

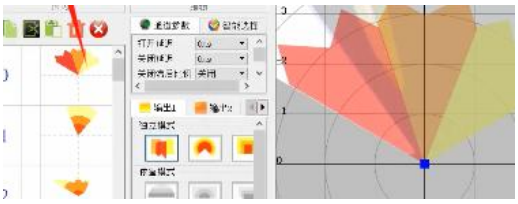
 	The sensor has been connected; and a message indicating that parameter reading is complete has been displayed.
	Click the top left corner, then click "Save configuration as file";
	Choose the path where you want to save the file; Enter the folder name; Click to save;
	Save the file; The file cannot be opened directly; it needs to be imported before it can be used.

5.8.2Configuration import

<table>
<tr>
<td>

</td>
<td>The sensor has been connected; and a message indicating that parameter reading is complete has been displayed.</td>
</tr>
<tr>
<td>  </td>
<td>Select the path to the configuration file;

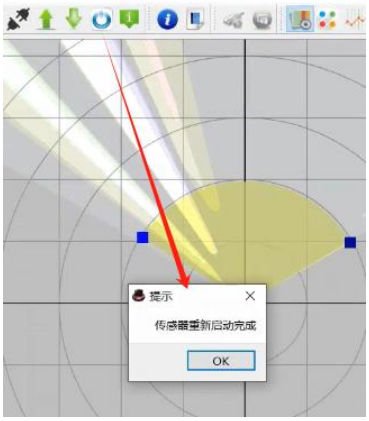
Select the corresponding configuration file

Click to open;</td>
</tr>
<tr>
<td>  </td>
<td>The current configuration will be displayed after opening the configuration.</td>
</tr>
<tr>
<td>
</td>
<td>Click to download parameters;

Waiting for the download to complete;

The prompt indicates that the parameters have been written.

Download successful;</td>
</tr>
</table>

	Click the restart button to apply the parameters.

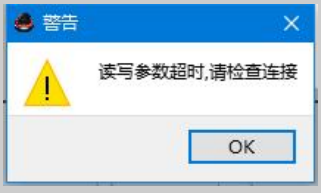
6Fault diagnosis and troubleshooting

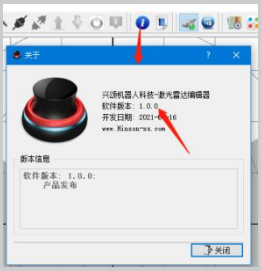
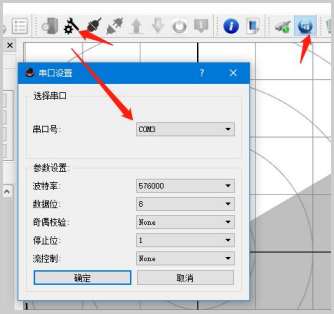
6.1Possible malfunctions

6.1.1Installation error

mistake	deal with
Insufficient reserved space	Increase installation intervals;
Static electricity protection is not available.	Add a grounding wire to the casing;
The detection range is obstructed.	Adjust the installation position to a location where there are no obstructions;

6.1.2Electrical installation errors

Error point	deal with
Power cord not connected	Connect the power cord
Power cord connected in reverse	Recheck the power polarity and change the wiring.
Incorrect power supply voltage	Check the power supply voltage;
The configuration software indicates that the serial port failed to open; 	1)examineUSBIs the cable a data cable? 2Check if the hardware is recognized in Device Manager; 3After the system drivers are installed, they are recognized.COMserial number;
Configure software connection timeout 	1Check if the configuration software model is compatible with the sensor; 2Check if the sensor is powered on and operating normally;

	 3Confirm that the configuration software version is correct;  4Configure software serial port settingsCOMIs the mouth correct? 

6.1.3Configuration error

Error point	deal with
There was no signal at the output.	1Check whether the normally closed and normally open settings meet the requirements; 2Check if the sensor's detection range is appropriate; 3Check if the wiring is correct;
There is always a signal at the output.	1Check whether the normally closed and normally open settings meet the requirements; 2Check if the sensor's detection range is appropriate; 3Check if the wiring is correct;
The output signal flickers and is unstable.	1Check if the sensor circuitry is functioning correctly; 2Check if edge triggering exists in the sensor setting area;

6.2Fault status

DE-42xxx/DE-46xxxThe power indicator light will show a fault when it is green.ledThe sensor will stop outputting signals when it is flashing.

ledstate	Fault Description
Chang Liang	Normal state
blinking	Fault status

6.3troubleshooting

DE-42xxx/DE-46xxxIf the system is not functioning properly or its status is uncertain, follow the steps below to troubleshoot and confirm the problem.

Fault	solve
Unable to detect object	Use the configuration software to view and monitor the current channel status and the drawn detection area;
Channel cannot be switched	Check whether the sensor is correctly receiving the channel switching command;
Output signal flashing	(1When the sensing range is at a critical point, the output port may become unstable. If necessary, the protection zone range should be expanded. (2Dust is present in the sensor detection window;
Power indicator light flashing	Contact our company

6.4Warranty period

The product comes with a limited warranty period. During the warranty period, if the product cannot be used normally due to quality problems, design defects, or other reasons, we will provide free after-sales maintenance.

■ Warranty period: 2 years from the date of sale.

6.5Warranty Scope

If the product is within the warranty period and falls within the warranty coverage, we will repair or replace it free of charge.

■ This product's warranty and after-sales service are limited to mainland China only.

■ The product cannot be used normally due to being opened during transportation;

■ The product itself is malfunctioning due to damaged components.

■ Product design flaws prevent normal use;

6.6Disclaimer

Please note the following conditions during product use: we will not provide free after-sales service or warranty.

■ The product was damaged due to improper installation according to the instructions;

■ Using this product in unsuitable environments and conditions may cause damage to the product;

■ Damage to the product caused by failure to follow the product instruction manual;

■ Unauthorized disassembly or repair of products without the company's permission;

■ Product damage caused by natural disasters, fires, or other irresistible external forces.

6.7Technical Support

Guangdong Xingsong Technology Co., Ltd.

Telephone: 0757-22218956 (Weekdays 8:30-17:30)

Website:www.hinson-xs.com

Email: hinson@hinson-xs.com

Technical SupportQQ:2636178756

微信扫码咨询客服

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